

Acknowledgements

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Bulwer's Petrel *Bulweria bulwerii* in Brazilian waters

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Bulwer's Petrel *Bulweria bulwerii* has a pantropical distribution, breeding on islands in the North Atlantic, Indian and Pacific Oceans (Megysi & O'Daniel 1997, Onley & Scofield 2007). In the Atlantic it breeds on the Azores, Madeira, the Desertas, Selvagem Grande, the Canaries and Cape Verdes, with a total population estimated at >11,000 breeding pairs (Brooke 2004). Atlantic breeders spend much of the year at sea, moving south and south-west to tropical latitudes, reaching 40°S and even South Africa (Carboneras 1992, Bourne 1995, Megysi & O'Daniel 1997, Flood & Fisher 2011), and north to 40°N (Bourne 1995, Legrand *et al.* 1999). Limits in the North Atlantic are based on records off the eastern USA, Caribbean Sea and Netherlands Antilles (French 1973, Haney & Wainright 1985, Legrand *et al.* 1999, Howell 2012), with vagrants off Ireland (Alibone 1980), continental Europe and in the Mediterranean (Flood & Fisher 2011). The species' distribution in the Atlantic was mapped in Flood & Fisher (2011), based on unpublished results from data loggers provided by J. González-Solís.

The at-sea distribution of Bulwer's Petrel in the South Atlantic potentially includes Brazilian waters. Van Oordt & Kruijt (1953) mentioned the species as 'rather common' and 'regular' off north-east Brazil between 31 December 1951 and 4 January 1952, and provided max. daily counts of six, nine, nine, five and 12 birds. They travelled from the Caribbean to South Africa and during this period crossed between Fernando de Noronha and São Pedro e São Paulo, within the Brazilian Exclusive Economic Zone (EEZ). Their southernmost record was one bird at 21°16'S, 09°30'W, midway between South America and Africa on 9 January (van Oordt & Kruijt 1954). Similar data were provided by Harris & Hansen (1974), who made a transect from north-east of São Pedro e São Paulo to south-west of Fernando de Noronha (while travelling from Europe to Uruguay) in October–November 1973. They recorded daily maxima of three, 15, 20 and 42 birds, the last just south-west of Fernando de Noronha. Bourne & Curtis (1985) mentioned 24 records in 1982–84, with up to eight birds in a day, all between 06°–39°S and 17°–37°W, in December–February. Bourne (1995) provided additional records, most between 10°N and 10°S and mentioned 'many records' in north-east Brazil during the boreal autumn, i.e. the post-breeding period. More recently, one was seen in Brazilian waters on 19 February 1999, 157 nautical miles (nm) south-west of São Pedro e São Paulo (Naves & Vooren 2000). These undocumented records suggest the



Figure 1. Bulwer's Petrel *Bulweria bulwerii*, 176 nautical miles east of Cabo de São Tomé, Rio de Janeiro, Brazil, 22 December 2011 (Samantha R. Klein)

species is frequent in the tropical Brazilian Economic Exclusive Zone (EEZ), especially near São Pedro e São Paulo, Fernando de Noronha and the Atol das Rocas, as well as in adjacent international waters. Given the lack of pelagic work in Brazilian waters and off oceanic islands, the species has not been documented. Here we provide the first documented record of Bulwer's Petrel off Brazil.

The observation occurred aboard the R/V *Atlântico Sul*, at 14.57 h on 22 December 2011. A single bird (Fig. 1) was seen by SRK & NWD over waters 3,500 m deep (22°17'61"S, 37°52'51"W), <15 nm from the Almirante Saldanha seamount, the top of which is just 61 m below the surface. It is located east of Cabo de São Tomé, Rio de Janeiro state, which is 176 nm away, and thus well within the Brazilian EEZ. There was good light, sea state 4 on the Beaufort scale, and the wind was 22 knots from the north. The bird was first seen c.200 m away, was in view for c.2 minutes and at one point crossed the bow of the ship, permitting photographs (Fig. 1). The only other species seen nearby was a Great Shearwater *Puffinus gravis*.

The bird flew low over the surface, alternating between gliding zigzags (similar to a gadfly petrel) with fast circular bat-like flight comprising strong wingbeats (like a storm petrel). It foraged at the surface, dipping its head to partly immerse the bill in flight. Size was estimated at between Wilson's Storm Petrel *Oceanites oceanicus* and Manx Shearwater *Puffinus puffinus*, both of which we observed during the trip. The long wings and tail were notable. Plumage was all dark with a pale band on the upperwing-coverts, from the scapulars (where narrow) to the carpal region, where it broadened, typical of *B. bulwerii* and, according to Onley & Scofield (2007), visible up to 250 m away. Photographs reveal that the dark bill was less robust than those of *Pterodroma* petrels, but longer than in storm petrels. Plumage, flight action, structure and size made identification straightforward, eliminating any all-dark *Pterodroma* and smaller storm petrels. The marked pale band on the wing-coverts and pointed tail eliminated the similar, but larger, Jouanin's Petrel *Bulweria fallax* (Legrand *et al.* 1999, Onley & Scofield 2007), which is unknown in the Atlantic Ocean (Flood & Fisher 2011, Howell 2012).

Our record in December accords with Bourne (1995), who stated that the species migrates to the South Atlantic in the boreal autumn, reaching 20°S by November, and returns to the Northern Hemisphere by April. The only other at-sea study in the same region, in July–September 1984, did not record the species (Coelho *et al.* 1990). Our sighting close to a seamount might indicate the species was foraging in an upwelling area, which was suggested to explain previous records near Fernando de Noronha (van Oordt & Kruijt 1953, Harris & Hansen 1974, Bourne 1995, Megysi & O'Daniel 1997). Upwellings are productive areas, where Bulwer's Petrel could find its main prey, like zooplankton, small

fish and squid (Zonfrillo 1986). Bulwer's Petrel generally forages alone or in pairs (Onley & Scofield 2007, Howell 2012), as noted also by van Oordt and Kruijt (1953).

Bulwer's Petrel was placed on the secondary list of Brazilian birds (CBRO 2011) due to a lack of tangible evidence (i.e., specimens, photographs etc.) (*sensu* Carlos *et al.* 2010). The present report provides the first documentation of the species' presence in Brazilian waters.

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